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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/664,041	09/18/2000	Harris A. Reynolds JR.	09432/130001	5162

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EXAMINER

KOCH, GEORGE R

ART UNIT

PAPER NUMBER

1734

DATE MAILED: 07/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

A2-11

Office Action Summary	Application No. 09/664,041	Applicant(s) REYNOLDS ET AL.	
	Examiner George R. Koch III	Art Unit 1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-60 is/are pending in the application.
- 4a) Of the above claim(s) 10, 11, 14, 16, 25, 26, 28, 29, 33, 39-50, 53 and 54 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 12, 13, 15, 17-24, 27, 30-32, 34-38, 51, 52, 55-60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The corrected or substitute drawings were received on 4-21-2003. These drawings are acknowledged.

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. Claims 1-9, 18-21, 27, 30, 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US Patent 4,172,562) and McClean (US 4,145,740).

As to claim 1, Smith discloses a winding station, and a conveyor for moving the article.

Smith does not disclose an axial sensor or a controller responsive to the axial sensor.

McClean discloses a winding station (item 2), a conveyor for moving the fiber winder (item 6), sensors for encoding various axial and rotational movements, including an absolute encoder for encoding the axial displacement of the carriage from the article (column 4, lines 41-51), and a controller for controlling various linear and rotational movements (see column 6, lines 1-30). While McClean moves the fiber winding system, and Smith moves the article or substrate, one in the art would appreciate that

the critical detail is the relative movement between the fiber dispensers (item 3) and the article. Smith discloses reciprocating the mandrel in an axial motion (column 2, lines 29-43). One in the art would appreciate that both systems are known equivalents, with advantages depending on the article being manufactured, and that one would want to move whichever of the article and fiber dispenser is relatively smaller. As pointed out by applicant in paper #9, page 13, lines 1-5, one would pick whichever system is easiest to use because "smaller discrete length articles are easier to move, and thus, may be moved using "movable dispensers" while large articles which are too unwieldy to move would benefit from axial motion".

One in the art would appreciate that the axial sensor and controller of McClean improves winding placement accuracy, ensuring proper placement of the fibers and improving the quality of the final product (see, for example, McClean, column 1, lines 39-49, and column 3, lines 30-45). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized such sensors and control devices of McClean in order to more accurately lay the fibers and improve the quality of the final product.

As to claims 2 and 3, McClean discloses a rotational encoder. By sending out pulses for each rotation, this encoder measures the speed of the rotation as claimed (see column 4, lines 52-63). The controller enables the claimed method of rotation.

As to claim 4, the apparatus of McClean would be capable of the claimed accuracy.

As to claim 5, McClean is capable of the claimed controller adjustments.

As to claim 6, McClean would be capable of being used in the claimed manner.

As to claim 7, the use of integrators in controller functioning is obvious in view of the disclosed incremental counter (item 43). Both structures enable encoding of the sensor input.

As to claim 8 and 9, Smith discloses proximity sensors for use in the monitoring of the axial motion and position of the article (item 43). Smith further discloses as to claim 9, that the sensors can be solenoids, i.e., magnetically based sensors.

As to claims 18-21, and claims 35-36, Smith discloses a resin ring for applying resin to the fibers (column 4, lines 3-11). The resin ring is rotationally fixed in Smith. The inclusion of the dynamic seal which is inflatable is an obvious variation of the fixed resin ring.

As to claim 27 and 30, the axial motion sensor of McClean is capable of performing axial resonance detecting in conjunction with the controller.

4. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US Patent 4,172,562) and McClean (US 4,145,740) as applied to claim 1 above, and further in view of Ashton (US Patent 3,970,495).

Smith and McClean does not disclose a pressure source to charge the interior of the article.

Ashton discloses that the mandrel with its sheathing is placed in a mold and inflated with a positive differential fluid pressure to expand the sheathing outwardly into contour conforming contact with the die faces of the mold (column 4, line 61 to column

5, line 2). An inflatable mandrel with a pressure source would allow for ease in removing the mandrel after winding by simply deflating the mandrel. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used a pressure source and mandrel as in Ashton in order to provide a nondestructive mechanism for removing the mandrel.

5. Claims 12, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US Patent 4,172,562) and McClean (US 4,145,740) as applied to claim 1 above, and further in view of Kornblicher (US 4,359,356).

Smith and McClean do not disclose a brake rotationally coupled to at least on fiber bobbin for maintaining tension.

Kornbichler discloses a brake (items 60 and 61) rotationally coupled to at least on fiber bobbin (items 7a-d), for maintaining tension (column 4, lines 20-30). One in the art would appreciate that maintaining tension in the fibers would prevent misaligned fibers in the winding process. Therefore, it would have been obvious to one of ordinary skill in the art to have utilized a brake and a bobbin in order to improve alignment accuracy.

As to claim 17, Kornblicher discloses a current brake, which is a functional equivalent of a magnetic brake.

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6. Claim 13-15, 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith, McClean and Kornbichler as applied to claim 12 above, and further in view of Shinno (US Patent 5,032,211).

The references as applied to claim 12 above do not disclose a torque sensor associated with a motor to rotate the winding station and connected to the controller.

Shinno discloses a tape laying device with a torque sensor associated with a motor to rotate the winding station and connected to the controller. The torque sensor, used in a fiber tape (i.e., fibers presented in tape form) layer apparatus, ensures that the tension is controlled within limits (abstract) for accurate placement (column 2, lines 3-12). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a torque sensor in order to achieve accurate placement.

As to claims 14 and 15, Shinno discloses a rotational element. A current sensor as claimed in claim 15 is obvious over the rotational sensor of Shinno. Both are functional equivalents of each other.

As to claims 23-25, the torque sensor of Shinno is capable of functioning as the torsional resonance sensor, in combination with the controller.

7. Claims 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US Patent 4,172,562) and Kornbichler (US patent 4,359,356).

As to claim 31, Smith discloses a winding station, and a conveyor for moving the article.

Smith does not disclose a brake rotationally coupled to at least on fiber bobbin for maintaining tension.

Kornbichler discloses a winding station (item 2), a conveyor for moving the fiber winder (item 6), and a brake (items 60 and 61) rotationally coupled to at least on fiber bobbin (items 7a-d), for maintaining tension (column 4, lines 20-30).

Kornbichler discloses that the brake improves and applies tension to the fiber strand to control the placement of the fiber (see column 4, lines 41-46). One in the art would appreciate that the brake and additional tension improves the placement of the fiber being wound and the final product quality. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized a brake as in Kornbichler in order to improve fiber winding and the overall product quality.

8. Claims 32-34, and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith and Kornbichler as applied to claim 31 above, and further in view of Shinno.

The references as applied to claim 31 above do not disclose a torque sensor associated with a motor to rotate the winding station and connected to the controller.

As to claims 32-34, Shinno discloses a tape laying device with a torque sensor associated with a motor to rotate the winding station and connected to the controller. The torque sensor, used in a fiber tape (i.e., fibers presented in tape form) layer apparatus, ensures that the tension is controlled within limits (abstract) for accurate placement (column 2, lines 3-12). Therefore, it would have been obvious to one of

ordinary skill in the art at the time of the invention to utilized a torque sensor in order to achieve accurate placement.

As to claims 37-39, the torque sensor of Shinno is capable of functioning as the torsional resonance sensor, in combination with the controller. Kornbilcher discloses the bobbin. The torque sensor renders the current sensor obvious as both are functional equivalents.

9. Claim 51, 52, 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith, Kornbichler, McClean and Shinno.

As to claim 51, Smith discloses a winding station, and a conveyor for moving the article.

Smith does not disclose a brake rotationally coupled to at least on fiber bobbin for maintaining tension.

Kornbichler discloses a winding station (item 2), a conveyor for moving the fiber winder (item 6), and a brake (items 60 and 61) rotationally coupled to at least on fiber bobbin (items 7a-d), for maintaining tension (column 4, lines 20-30).

Kornbichler discloses that the brake improves and applies tension to the fiber strand to control the placement of the fiber (see column 4, lines 41-46). One in the art would appreciate that the brake and additional tension improves the placement of the fiber being wound and the final product quality. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized a brake as in Kornbichler in order to improve fiber winding and the overall product quality.

Smith discloses a resin ring for applying resin to the fibers (column 4, lines 3-11). The resin ring is rotationally fixed in Smith. The inclusion of the dynamic seal which is inflatable is an obvious variation of the fixed resin ring. Smith discloses that the resin ring allows for application of resin, thereby improving fiber winding placement. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have included a resin ring as claimed in order to improve fiber winding placement.

Smith does not disclose the claimed sensors.

McClean discloses sensors for encoding various axial and rotational movements, including an absolute encoder for encoding the axial displacement of the carriage from the article (column 4, lines 41-51), and a controller for controlling various linear and rotational movements (see column 6, lines 1-30). McClean discloses a rotational encoder. By sending out pulses for each rotation, this encoder measures the speed of the rotation as claimed (see column 4, lines 52-63). The controller enables the claimed method of rotation, and improves application accuracy. Furthermore, it would have been obvious that such a controller would control the brake. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the sensors and controllers of McClean in order to achieve accuracy in the application of the fibers.

Smith does not disclose a torque sensor associated with a motor to rotate the winding station and connected to the controller.

Shinno discloses a tape laying device with a torque sensor associated with a motor to rotate the winding station and connected to the controller. The torque sensor, used in a fiber tape (i.e., fibers presented in tape form) layer apparatus, ensures that the tension is controlled within limits (abstract) for accurate placement (column 2, lines 3-12). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a torque sensor in order to achieve accurate placement. The torque sensor of Shinno is capable of functioning as the torsional resonance sensor, in combination with the controller. Kornbilcher discloses the bobbin. The torque sensor renders the current sensor obvious as both are functional equivalents.

Claims 52 and 55 are rejected on similar grounds as claim 51 above, as they comprise all of the limitations disclosed. The axial motion sensor and controller of McClean are capable of functioning as an axial resonance detector.

10. Claim 56-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith, Kornbichler, McClean and Shinno as applied to claim 51 above, and further in view of Wulker (US Patent 5,942,059).

As to claim 56 and 59, the references as applied to claim 51 above do not disclose a sensor that measures the external diameter of the article upon which a strand is being applied.

Wulker discloses a sensor (item 12) that measures the external diameter of the article upon which a strand (item 4) is being applied. Wulker discloses that the sensor provides feedback which controls the application operation. Therefore, it would have

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been obvious to one of ordinary skill in the art at the time of the invention to have utilized a diameter sensor as in Wulker in order to provide another layer of control preventing the formation of malformed articles.

As to claim 57, McClean as applied to claim 51 above discloses control of the speed of rotation.

As to claim 58, Shinno discloses tension control.

As to claim 60, Kornbilcher discloses the brake.

Response to Arguments

11. Applicant's arguments with respect to claims 1-9, 12,13,15,17-24,27, 30-32,34-38, 51, 52, 55-60 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George R. Koch III whose telephone number is (703) 305-3435 (TDD only). If the applicant cannot make a direct TDD-to-TDD call, the applicant can communicate by calling the Federal Relay Service at 1-800-877-8339 and giving the operator the above TDD number. The examiner can normally be reached on M-Th 10-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (703) 308-3853. The fax phone

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numbers for the organization where this application or proceeding is assigned are (703) 305-7718 for regular communications and (703) 305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

A handwritten signature in black ink, appearing to read "G. Koch III".

George R. Koch III
July 14, 2003

A handwritten signature in black ink, appearing to read "R. Crispino".

RICHARD CRISPINO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700